KOMISSARENKO, V. S.

V.S. Komissarenko. Quantitative spectral determination of admixtures in metallic cadmium. P. 1260

SO: Factory Laboratory, No. 10, 1950

KOMISSARENCO V. S.

Category : USSR/Optics - Optical Methods of Analysis. Instruments K-7

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 5158

Author : Komissarenko, V.S.
Inst : Saratov Plant for Alkali Storage Batteries, USSR
Title : Spectral Method for the Determination of Aluminum and Silicon in Iron Ore.

Orig Pub : Zavod. laboratoriya, 1956, 22, No 4, 453-454

Abstract : An experimental method was developed to determine the aluminum and silicon content in Krivorog iron ore; the aluminum and silicon remain after the ore is chemically processed for enrichment purposes. The concentrations of aluminum determined range from 0.047 to 0.206% Al/Fe, and those of SiO_2 range from 0.09 to 2.09% Si/Fe. The sample for analysis is pulverized together with carbon powder in a 1:1 proportion and placed in the carbon electrode of an a-c arc. The current if 15 amperes. The Q of the spectrograph equals 24. The analysis is performed with the three-standard methods. The analytical pairs of lines are Al 3.082.6-Fe 3055.26 A, and Si 2506.9-Fe 2507.9 A. The mean-squared error is 7.8% in the determination of aluminum and 10.4% in the determination of silicon. The spectral-method data agree with the results of chemical analysis.

Card : 1/1

Komissarenko, V.S.

Category : USSR/Analytical Chemistry - Analysis of Inorganic substances. G-2

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30974

Author : Komissarenko V. S.
Inst : not given Saratov Plant for Alkali Storage Batteries
Title : Spectral Determination of Calcium and Magnesium in Mixture of Nickelous Hydroxide and Graphite and also in Hydroxide and Sulfate of Nickel.

Orig Pub: Zavod. laboratoriya, 1956, 22, No 11, 1323-1324

Abstract: The samples are converted to a solution which is used to impregnate the carbon electrodes. The analysis is carried out according to a single calibration graph, in Δ S, lg C coordinates. Ca/Ni is determined within 0.035-0.35 and Mg/Ni from 0.03 to 0.14%. Spectra are excitated with a Feissner generator (capacitance 3000 cm, inductance--0) and are registered with a medium spectrograph, on spectral plates of type II, sensitivity of 16 GOST units. There are dissolved in HCl (1:1) 5 g of nic-

Card : 1/2

The Determination of Lithium and Sodium in Lyes by the Spectral Method

32-24-4-37/67

density of 1.18. As inner standard a $PbCl_2$ solution in lye is used, in which case different ratios are used for the determination of lithium and sodium respectively. The spectra are recorded on an O-24 apparatus; data are given in detail. The average square deviation is given as amounting to ± 11% (relative). The method described is employed for rapid determinations carried out in industry. There is 1 reference, 1 of which is Soviet.

ASSOCIATION: Gosudarstvennyy zavod shchelochnykh akkumulyatorov, g.Saratov (State Factory for Lye Accumulators of the City of Saratov)

1. Lithium--Determination 2. Sodium--Determination 3. Sodium hydroxide--Spectrographic analysis 4. Potassium hydroxide --Spectrographic analysis

Card 2/2

KOMISSARENKO, Yu.S.

Experience in the use of operational accounting for the production results at the "Lenin Order" Fur Combine in Kazan. Kozh.-obuv. prom. 6 no.2:19-23 F'64. (MIRA 17:5)

KOMISSARENKO, Yu.S.

Improve the quality and broaden the assortment of fur products.
Leg.prom. 14 no.2:10-14 F '54. (MLRA 7:5)

1. Direktor Kazanskogo ordena Lenina mekhovogo kombinata.
(Fur trade)

KOMISSARENKO, Yu.S.

The Kazan Fur Combine during the sixth five-year plan. Leg.prom. 16 no.4:15-17 Ap '56. (MLRA 9:8)

1. Direktor Kazanskogo mekhovogo kombinata.
(Kazan--Fur)

KOMISSARENKO, Yu.S.

Experience in the accounting for the production output by the standard costs of manufacturing. Kozh.-obuv. prom. 5 no.11: 6-9 N '63. (MIRA 17:1)

1. Direktor Kazanskogo mekhovogo kombinata.

KOMISSARENKO, Yu.S.

Processing of fur sheep skins preserved with the acid and salt method in the Kazan Fur Combine. Kozh.-obuv. prom. 6 no.12: 4-6 D '64 (MIRA 18:2)

1. Direktor Kazanskogo mekhovogo kombinata.

NENAKHOV, Petr Zakharovich; KOMISSAROV, A.D., inzh., retsenzent; ORLOV, V.M., inzh., red.; CHISHLYKOV, Ye.S., inzh., red.; BOBROVA, Ye.N., tekhn. red.

[Manual of the baggage-weighing and issuing attendant]Spravochnik vesovshchika-razdatchika bagazha. Moskva, Transzheldorizdat, 1962. 210 p. (MIRA 15:11)
(Railroads—Baggage)

KOMISSAROV, A.F., inzh.

Mechanizing the oxygen cutting out of circular apertures in curvilinear surfaces. Svar.proizv. no.7:21-23 Jl '62.
(MIRA 15:12)
(Gas welding and cutting--Equipment and supplies)

L 05109-67 EWT(d)/EWP(h)/EWP(l)

ACC NR: AP6012133 (A) SOURCE CODE: UR/0413/66/[illegible]

AUTHORS: Komissarov, A. F.; Antropov, G. F.

ORG: none

TITLE: An automatic grip. Class 35, No. 180320

18
B

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 7, 1966, 52

TOPIC TAGS: hoisting equipment, automatic machine, automatic equipment

ABSTRACT: This Author Certificate presents an automatic grip for lifting and carrying loads. The grip contains a casing with hooks hinged onto it through drawbars. It is connected to the power cylinder and to a stopping device mounted in the case, fixing the position of the grasping hooks (see Fig. 1). To maintain the hooks of the grip in the open position when carrying no load, the piston shaft of the power cylinder is hollow and has an opening connected to the working interior of the cylinder. This shaft is attached to a movable frame mounted in the casing. The frame is held by a plunger placed in the hollow shaft. The frame activates the stopping device.

Card 1/2

UDC: 621.86.061.3

Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 06Jun63

Card 2/2

L 06124-67 EWT(1)

ACC NR: AP6022005 SOURCE CODE: UR/0120/66/000/003/0107/0114

AUTHOR: Denisov, Yu. N.; Komissarov, A. G.; Prilipko, V. I.; Susov, Yu. I.; Shishlyannikov, P. T.

35
B

ORG: Joint Nuclear Research Institute, Dubna (Ob"yedinennyy institut yadernykh issledovaniy, Dubna)

TITLE: Electron-counting system for stabilizing frequency of r-f oscillators

SOURCE: Pribory i tekhnika eksperimenta, no. 3, 1966, 107-114

TOPIC TAGS: rf oscillator, electronic oscillator, frequency stability

ABSTRACT: The development of a new apparatus is reported which automatically sets and maintains the frequency of an oscillator within 0.001% in a 1--100 Mc band. The time Δt_T necessary for filling a counting decade (1 through 6, adjustable) register with the pulses recurring at a frequency f_x is compared with a reference time interval Δt_r. The comparison results in an error signal which adjusts, through a feedback channel, the parameters of the oscillatory circuit in such a way that $f_x = N/\Delta t_r$, where N is the number of pulses required for filling the register. The register capacity varies due to clearing (before each filling) not to zero, but to $N' = N_m - N$, where N_m is the maximum capacity of the register. Thus, when N' varies, f_x also varies always remaining $f_x = (N_m - N')/\Delta t_r$. The frequency error is corrected

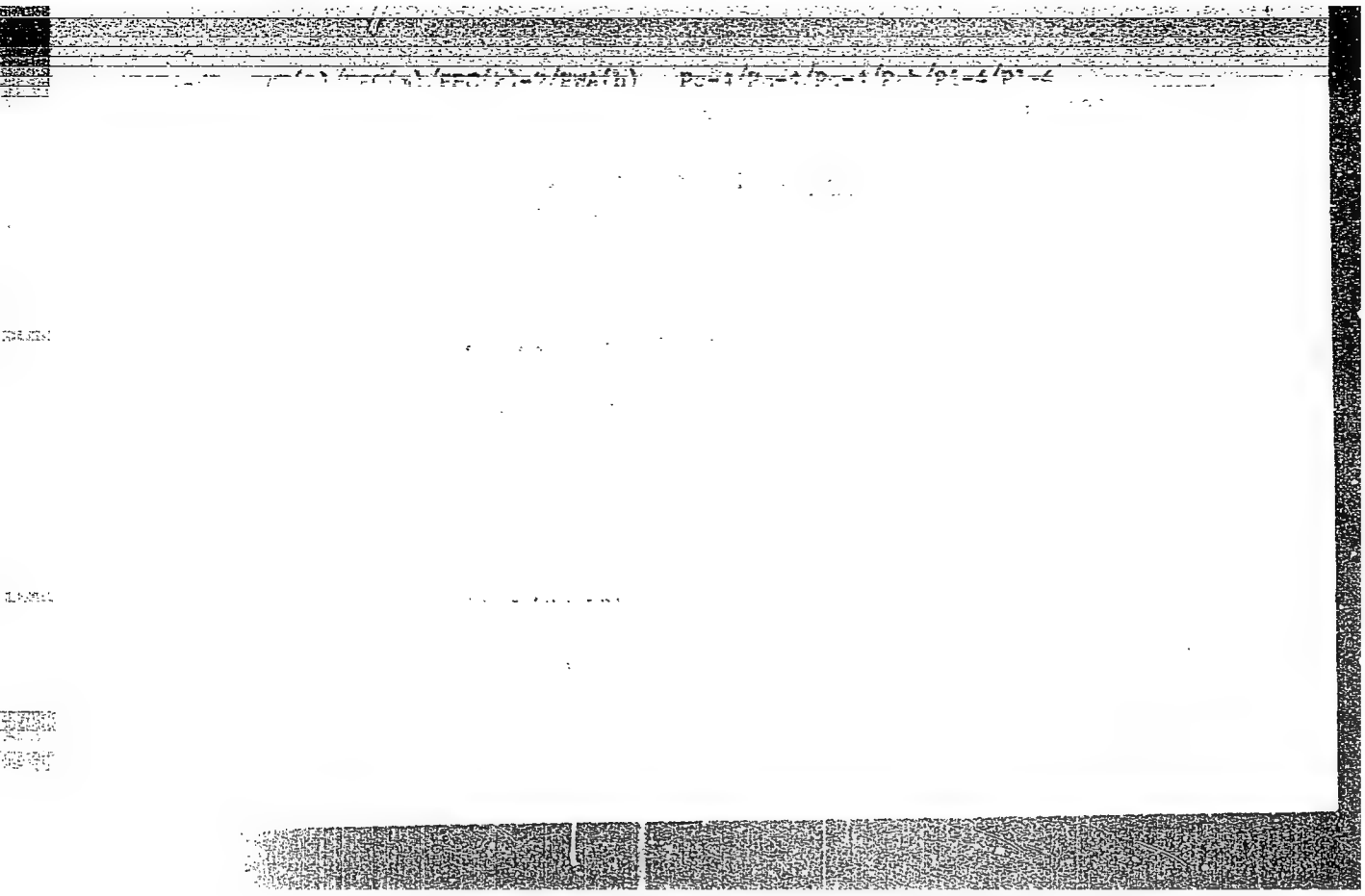
L 06124-67

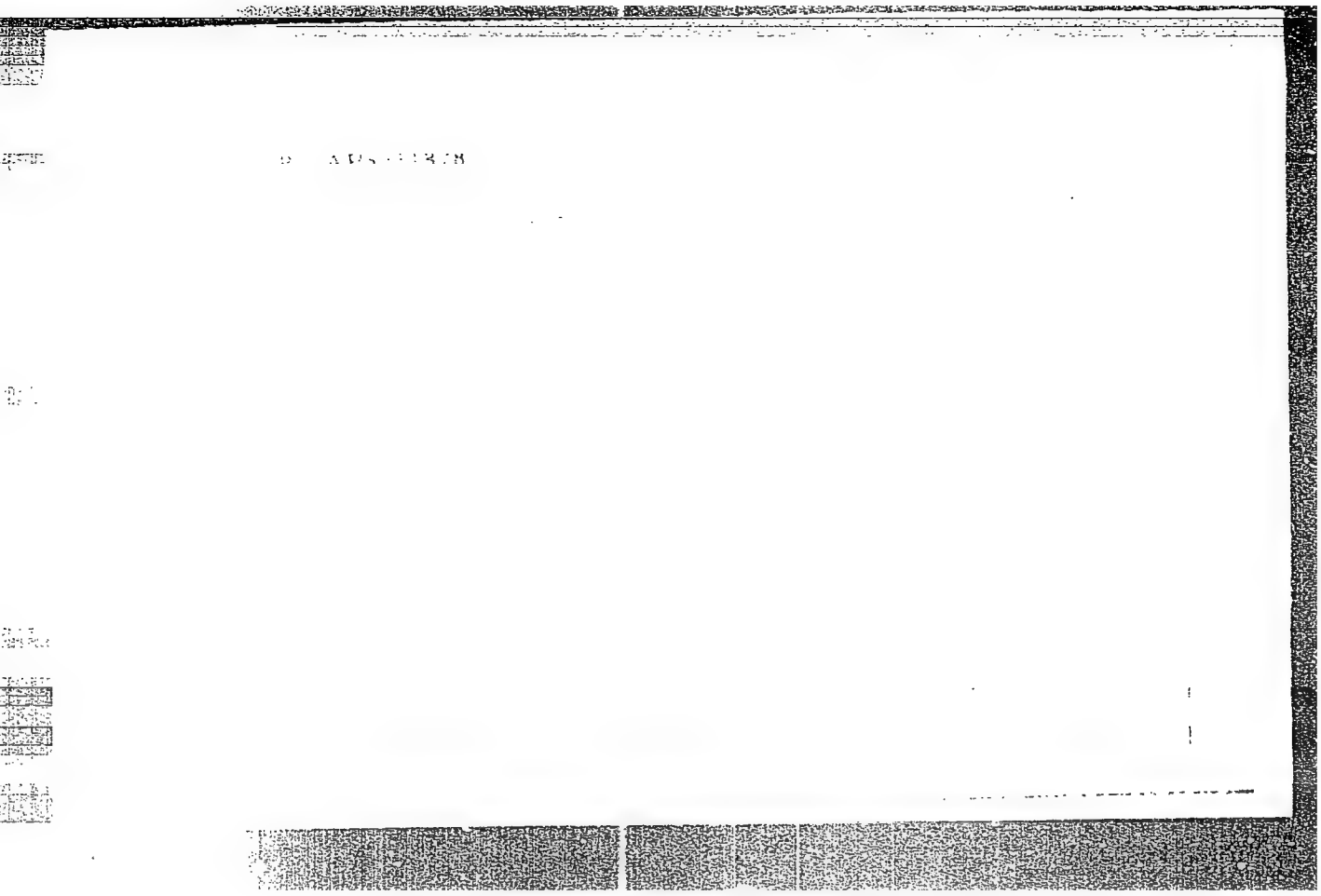
ACC NR: AP6022005

"coarsely" by a servomotor-operated main capacitor of the oscillatory circuit and "finely" by an additional varicap in the same circuit. If the reference time interval is 1 sec, the value of $N_m - N'$ is in cps. In NMR apparatae, the value of $N_m - N'$ can be expressed directly in teslas or oersteds. The frequency stabilizing system is designed for a 1--10-Mc band (or 0.0235--0.2350 teslas). An additional high-speed decade is used to widen the frequency band to 100 Mc (or 2.35 tl). Principal circuit diagrams of the apparatus and its component parts are explained. Orig. art. has: 9 figures and 5 formulas.

SUB CODE: 20, 09 / SUBM DATE: 08Jun65 / ORIG REF: 002

Card 2/2 LC





KOMISSAROV, A.I., kand.tekhn.nauk

Plotting thread-feed graphs for shuttle sewing machines. Izv. vys.ucheb.zav.; tekh.leg. prom. no.1:111-122 '58. (MIRA 11:6)

1.Moskovskiy tekhnologicheskiy institut legkoy promyshlennosti.
(Sewing machines)

KOMISSAROV, A. I.

"Analysis of the Upsetting Mechanisms of Plate-Tightening Machines." Thesis for degree of Cand. Technical Sci. Sub 1 July 50, Moscow Technological Inst of Light Industry imeni L. M. Kaganovich.

Summary 71, 4 Sep 52, Dissertations Presented for Degrees in Science and Engineering in Moscow in 1950. From Vechernyaya Moskva, Jan-Dec 1950.

1. KOMISSAROV, A.I.

2. USSR (600)

4. Electric Engineering

7. Duplex sheating machine for connecting wires, Rab.energ. 3 no. 4, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

KOMISSAROV, A.I.

Electrical Engineering Abst.
Vol. 57 No. 675
Mar. 1954
Electrical Engineering

921. Erection experience with 400 kV (overhead) line conductors. L. N. GREBENSCHIKOV AND A. I. KOMISSAROV. *Elekt. Stantsii*, 1953 *No.* 9, 32–5. *In Russian.*

A description of experience with a 4300 m trial section of 400 kV line over wooded, hilly country. The section has 11 supporting towers, the 9 intermediate ones having a conductor height of 27 m. 400 mm length of side, triangular spacing of conductors is used. Structural length of each conductor is 1500 m. Each phase comprises 3 separated conductors and these were laid simultaneously, details being given of tractor arrangements and of yoke and guide pulley systems. This method avoids entanglement of conductor wires. During lifting over long spans, ground friction ensures the maintenance of insulator chains under tension thereby preventing bending of their pins and eyes. Over short spans special braking devices are required to achieve this. Efficient erection demands frictionless guide pulleys with well-lubricated ball bearings in sealed housings, and also effective field or radio-telephone communication between erection squads. The relative merits of various suspension insulators are described, as also is a method of checking and marking the conductors during erection over sites such as railway lines where minimum interference with amenities is essential. Malleable iron eyes have been found unsuitable in certain insulator systems, and it is pointed out that tensioning screws in the latter are useless except in short spans. Distance separators between the conductors of the same phase are necessary to avoid damage due to wind pressure. Improvements are suggested in the steelwork of the supporting structures to facilitate erection.

I. McKERROW.

Komissarov, A. I.

133-1-18/24

AUTHORS: Kolosov, M.I., Ayzenshtok, I.Ya., and Komissarov, A.I., Engineers.

TITLE: Rational Conditions of Annealing Quality Rolled Products in Batch Furnaces with Mechanical Charging of Piles (Ratsional'nye rezhimy otzhiga sortovogo prokata v kamernykh pechakh s mekhanizirovannoy posadkoy paketov)

PERIODICAL: Stal', 1958, No.1, pp. 71 - 74 (USSR).

ABSTRACT: In 1946, two new batch furnaces for annealing structural rolled steel, designed by Gipromez, were erected. Characteristic feature of these furnaces (Fig.1): under bottom firing with additional ports for recirculation of the combustion products; mechanised charging of piles. The initial operation of these furnaces was found to be unsatisfactory and in order to establish a correct annealing practice, a number of investigations of the heating of metal were carried out. On the basis of the results obtained, correct annealing practice was developed. This results in a 100% increase in the amount of annealed metal (from 1946-1956), in addition fuel and power consumption decreased by 30 and 15%, respectively, and the cost of annealing a ton of metal decreased from 700 to 75 roubles. It is stated that the annealing furnaces on the Chelyabinsk

Card 1/2

Rational Conditions of Annealing Quality Rolled Products in Batch Furnaces with Mechanical Charging of Piles

Works as well as similar furnaces on the Dneprospetsstal' Works are superior to furnaces on other works with sliding bottoms. The following participated in the investigation: V.N. Shvetsov, N.K. Ipatov, A.A. Khuden'kikh, G.Ye. Mysina, R.P. Syromolotova, M.Ye. Anisimova, Z.A. Tavakina, A.A. Tsvetkova, Z.A. Monastyrskaya. There are 2 figures and 2 tables.

ASSOCIATION: Chelyabinsk Metallurgical Works (Chelyabinskiy metallurgicheskiy zavod)

AVAILABLE: Library of Congress

Card 2/2

KOMISSAROV, A.I.; KELIN, Yu.A. (Moskva)

Characteristics of the work of the rotating thread feeder of a shuttle sewing machine. Shvein.prom. no.1:12-16 Ja-F '64.
(MIRA 17:3)

KOMISSAROV, A. I.

"Heat treatment of carbon and alloyed steel" by V.M. Doronin. Reviewed by A.I. Komissarov. Stal' 18 no.4:355 Ap '58. (MIRA 11:5)

1. Chelyabinskiy metallurgicheskiy zavod.
(Steel--Heat treatment)
(Doronin, V.M.)

AUTHOR: Komissarov, A. I. 133-58-4-26/40

TITLE: Review of the book by V. M. Doronin "Thermal Treatment of Carbon and Alloy Steel" (Retsenziya na knigu V. M. Doronina "Termicheskaya obrabotka uglerodistoy i legirovannoy stali")

PERIODICAL: Stal', 1958, Nr 5, p 355 (USSR)

ABSTRACT: The book is published by Metallurgizdat, 1955, 391 pages, 301 figures. The book was reviewed by a reader's conference on the Chelyabinsk Works. The review is favourable.

ASSOCIATION: Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Works)

1. Carbon steel--Heat treatment 2. Alloy steels--Heat treatment

Card 1/1

133-58-5-9/31

AUTHORS: Kolosov, M. I., Ayzenshtok, I. Ya., Komissarov, A. I., Mysina, G. Ye. and Povolotskaya, M. S.

TITLE: The Influence of the Weight of Ingots on the Quality of Structural Steels (Vliyaniye vesa slitka na kachestvo konstruktsionnykh staley)

PERIODICAL: Stal', 1958, Nr 5, pp 411-414 (USSR)

ABSTRACT: An investigation of the possibility of increasing the weight of ingots of steels 18KhVA, 40KhNMA, 12Kh2N4A and 30KhGSA from 1.2 and 2.65 t to 4.5 t was carried out. This increase in weight of ingots was necessary in order to increase the throughput of the casting pit and blooming mill as well as to increase the degree of deformation on rolling profiles of a large cross-section (250 to 300 mm). The investigation was carried out on eight heats made in a 30-ton electric furnace. The experimental metal was teemed into 1.18, 2.65 and 4.5 t ingots. In order to study the character of crystallisation three ingots of various sizes from each melt of each of the steels investigated were selected. After slow cooling and a softening heat treatment from the twelve selected ingots axial longitudinal plates were cut. The experimental ingots of 2.65 and 4.56 (charged hot into soaking pits)

Card 1/4

The Influence of the Weight of Ingots on the Quality of Structural Steels

were rolled on a blooming mill to a cross-section 250 x 250 mm and then on a mill 800 into semis 140 x 140 mm. Ingots weighing 1.18 t were rolled on a mill 800 into semis 140 x 140 mm. For the studies of the macrostructure and mechanical properties specimens were taken from semis 250 x 250 on the following distances from the top of ingots %:

Ingot 2.65 t 19, 58, 98
Ingot 4.5 t 19, 39, 58, 78, 98

The macrostructure of etched specimens was evaluated according to MAP-MChM scale. Thermal treatment of specimens for testing mechanical properties was done according to MPTU2333-49. The macrostructure of ingots is shown in Figs. 1-4. The results obtained indicated that: 1. Macrostructural defects in rolled steels were caused by defects in the cast structure of ingots. 2. Axial intercrystallite cracks in rolled steel 18KhNVA of a cross-section 250 x 250 from 4.5 t ingots remain unwelded during rolling in spite of a considerable

Card 2/4 degree of reduction (in steel 12Kh2N4A they are welded

The Influence of the Weight of Ingots on the Quality of Structural Steels

on both profiles 140 x 140 mm and 250 x 250 mm (from ingots of all weights). 3. The axial porosity and v-shaped cracks in ingots of steels 40KhNMA and 30KhGSA are welded during rolling. 4. The degree of development of segregation outside the central zone of ingots depends on the chemical composition of steel and increases with increasing weight of ingots, but does not exceed the degree permitted by MAP-MChM 1951. From the steels investigated the highest development of the segregation was observed in ingots of steel 30KhGSA. 5. The weight of ingot has no influence on the mechanical properties of steels. 6. The indices of mechanical properties of steels investigated were high with the exception of the top part of 4.5 ton ingot of steel 30KhGSA, where strength and plasticity indices were lower than is required by standards. It is concluded that: 1. Increasing the weight of ingots of 18KhNVA steel from 1.18 to 2.65 ton to 4.5 t is not advantageous, as this deteriorates the macrostructure of metal due to developing axial intercrystallite cracks which are not welded during rolling. 2. Steels 12Kh2N4A

The Influence of the Weight of Ingots on the Quality of Structural Steels

and 40KhNMA can be cast into 4.5 ton ingots as their structure and mechanical properties remain satisfactory.
3. The problem of casting steel 30KhGSA into 4.5 t ingots requires further investigation.
There are 4 figures.

ASSOCIATION: Chelyabinskiy metallurgicheskiy zavod
(Chelyabinsk Metallurgical Works)

KOMISSAROV, A-I.

PHASE I BOOK EXPLOITATION SOV/3845

Lyakhovich, Lev Stepanovich, and Abram Izrailevich Komissarov

Osnovy tekhnologii termicheskoy obrabotki sortovogo prokata (Fundamentals of Heat Treatment of Merchant Steel Bars) [Chelyabinsk] Chelyabinskoye knizhnoye izd-vo, 1959. 90 p. 2,000 copies printed.

Ed.: G.O. Obramovich; Tech. Ed.: V.I. Kolbichev.

PURPOSE: This book is intended for workers in heat treatment shops, inspection departments, and laboratories of metallurgical plants. It may also be useful to students in metallurgical departments of tekhnikums and institutes.

COVERAGE: The authors describe experience gained in recent years by metallurgical plants in the southern Urals, especially experience in heat treatment of merchant bars at the Chelyabinsk metallurgical plant. Theoretical problems of heat treatment are not discussed here, since they are treated elsewhere in special literature. Heat treatment regimes are covered thoroughly, and methods of inspection of merchant bar microstructure are also outlined. No personalities are mentioned. There are 20 references, all Soviet.

Card 1/3

Fundamentals of Heat Treatment of Merchant Steel Bars SOV/3845

TABLE OF CONTENTS:

Card 2/3

AVAILABLE: Library of Congress (TS340.L48)

Card 3/3

VK/wbc/mas
7-28-60

SOV/133-59-9-13/31

AUTHORS: Keys, N.V., Ayzenshtok, I.Ya., Komissarov, A.I. and Royak, D.B., engineers

TITLE: The Production of Steel 38KhMYuA for Internal Combustion Engines

PERIODICAL: Stal', 1959, Nr 9, pp 808-811 (USSR)

ABSTRACT: Changes in the technology of smelting 38KhMYuA steel since the start of its production in 1952, are outlined. The main points in the smelting technology used at present: a) a preliminary deoxidation of the bath with pig iron after the end of the oxidising period; at the beginning of refining, the bath is deoxidised with a mixture of silicomanganese and 75% ferrosilicon in lumps; b) addition of ferrochromium at the beginning of refining; c) diffusion deoxidation with coke and ferrosilicon during 20 minutes; d) shortening of the reducing period to 80 minutes (instead of 120 to 150 minutes in the previous technology) metal temperature before casting 1600 to 1620°C in the ladle 1575 to 1590°C. Despite improvements in the smelting technology, the proportion of defective metal is still high (in 1957 - 145%). Due to the appearance of spot segregation, head crops were

Card 1/3

The Production of Steel 38KhMYuA for Internal Combustion Engines

increased to 25%. Most common defects encountered in this type of steel are described: 1) Spot segregation consisting of localised enrichment of metal in carbon, sulphur and phosphorus; the appearance of the defect is associated with the evolution of gas during crystallization. 2) "Bubbles" - in the axial zone of macrotemplets discontinuities in the metal called "coarse bubbles" (Fig 1). A fracture along the zone of the "bubbles" appears as lamination in the form of dark thread. No changes in structure in the zone of the defect was noticed, non-metallic inclusions are absent. Studies of longitudinal cross sections of ingots (Fig 2) indicated that the defect is associated with insufficient feeding of the ingot during its solidification. 3) Cracks - usually situated in the central part of macrotemplets (Fig 3). The defect was found to be caused by too early transportation of ingot bogies after teeming (40 minutes) by retaining the bogies in the casting pit for 2 hours 20 minutes this type of defect disappeared. An investigation of the defects in the finished parts - blisters (Fig 5, 6 and 7) indicated that some improvements

The Production of Steel 38KhMYuA for Internal Combustion Engines

in the forging of semis and stamping of parts are necessary as at present, the central part of the ingot is pushed towards the internal working surface of the stamped parts. The necessity of establishing well founded standards for defects which at present are considered as unavoidable is stressed. There are 7 figures and 6 Soviet references.

ASSOCIATION: Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Works)

KNYS, N.V.; KOMISSAROV, A.I.

Studying conditions for the acceleration of the sintering process and preparing a high-basicity fluxed sinter.
Stal' 20 no.8:698 Ag '60. (MIRA 13:7)
(Sintering)

KEYS, N.V.; KOMISSAROV, A.I.

Laboratory research at the Chelyabinsk Metallurgical Plant.
Stal' 20 no.8:715 Ag '60. (MIRA 13:7)
(Open-hearth process)

S/133/60/000/008/005/013

AUTHORS: Keys, N. V. and Komissarov, A. I.

TITLE: News in Brief

PERIODICAL: Stal', 1960, No. 8, p. 721

TEXT: 1. In the Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Plant) tests were carried out in order to improve the electromagnetic properties of transformer steel. Mainly the oxidizing period of melting, the temperature conditions and various deoxidizing agents for removing the non-metallic inclusions from the metal were examined. The blowing of oxygen into the metal was started when the carbon content in the bath was 0.20-0.25% and ended when the maximum carbon content was 0.03-0.035%. Optimum metal temperature in the ladle was 1,570°-1,590°C. During pouring, wooden frames were placed into the ingot molds. The electromagnetic properties of the sheets of 0.5 mm in thickness were improved by 30-35% in the Novosibirskiy metallurgicheskiy zavod (Novosibirsk Metallurgical Plant) compared to the 1958 products and by 52-63% in the MMK. The quantity of waste matter, due to surface defects, decreased from 3.2% to 1.4%. In order to remove the non-metallic inclusions

Card 1/3

...as a result
...smelting steel with

carbon tetrachloride, the surface of the ingots was smoother and no preliminary planing was necessary. The ingot molds lasted for only 8-10 smeltings. Various protective lubricating substances were tested, therefore. The best results were obtained with petrolatum consisting of the mixture of paraffin hydrocarbons and ceresin, produced by deparaffination of aircraft oils.

Card 3/3

S/133/60/000/008/010/013

AUTHORS: Keys, N. V. and Komissarov, A. I.

TITLE: News in Brief

PERIODICAL: Stal', 1960, No. 8, p. 740

TEXT: At the Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Plant) the output of rolled products from the 1X18H9T (1Kh18N9T) type stainless steel was raised considerably, and consequently the demands made on the 800 and 1100 type adjusting machines also increased. In order to raise the capacity of the adjusting process, two equipments for flame scarfing the stainless steel were installed. An aluminum-magnesium powder is applied in this process. It was found that it is economical to use flame scarfing only for metals with rough surface defects.

Card 1/1

S/133/60/000/008/012/013

AUTHORS: Keys, N. V. and Komissarov, A. I.

TITLE: News in Brief

PERIODICAL: Stal', 1960, No. 8, p. 757

TEXT: 1. The new melting technology was applied at the Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Plant) in order to improve the quality of ball-bearing steel differs from the conventional method in several aspects: the boiling period is made more intensive, pig iron is added at the end of the oxidation phase, the metal temperature is reduced during melting and pouring (1,530°-1,550°C); the steel and slag are tapped through an opening of 250-300 mm. This new method decreases the quantity of non-metallic inclusions, oxides, etc. in the metal (the amount of specimens with inadmissible contents of oxides decreased from 14.9-16.0% to 7.7-6.0% and the amount of globular enclosures from 5.7-7.5% to 0.55-2%). 2. The causes of the low notch toughness of the 30KhGSNA (30ХГСНА) type steel were investigated. The conditions of the heat treatment for this type of steel are prescribed by a standard for an average chemical composition of the metal with 0.27-0.32% C and maximum content

Card 1/2

KEYS, N.V.; KOMISSAROV, A.I.

Improving the quality of roller-bearing steel. Stal' 20 no.8:757 Ag '60. (MIRA 13:7)
(Bearing metals)

KOMISSAROV, A.I., kand.tekhn.nauk, dotsent

Designing mechanisms with lower pairs according to intermittent dependences. Nauch.trudy MTILP no.18:191-203 '60. (MIRA 15:2)

1. Kafedra mashin i apparatov legkoy promyshlennosti Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.
(Mechanical engineering)

KOMISSAROV, A.I., kand.tekhn.nauk, dotsent

Designing the crankgear mechanism according to the given movement of the crosshead. Nauch.trudy MTILP no.18:204-215 '60. (MIRA 15:2)

1. Kafedra mashin i apparatov legkoy promyshlennosti Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.
(Cranks and crankshaft)

KOMISSAROV, A.I., kand. tekhn. nauk, dotsent; MURYGIN, V. Ye., assistent

Formation of the loop overlap in shuttle sewing machines. Nauch. trudy MTILP no.26:158-169 '62. (MIRA 17:5)

1. Kafedra mashin i apparatov legkoy promyshlennosti Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.

KEYS, N.V.; KOMISSAROV, A.I.

Research being carried out by the Chelyabinsk Metallurgical Plant. Stal' 21 no.8:[illegible],707,745 Ag '61. (MIRA 14:9)
(Chelyabinsk--Metallurgical plants)

S/133/62/000/006/004/015
A054/A127

AUTHORS: Keys, N. V., Komissarov, A. I.

TITLE: At the Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Plant)

PERIODICAL: Stal', no. 6, 1962, 525

TEXT: 1) The corrosion resistance of the 1Х18Н9Т (1Kh18N9T) grade steel containing 0.09 - 0.11% carbon increases if its titanium content exceeds the fivefold amount of carbon by more than 0.02%. The tendency towards intergranular corrosion also depends on the degree of reduction of the metal and slag during refining. This is indicated by the increased silicon content in the refining process of heats with high corrosion resistance. At a Ti : C = 5 ratio they pass the corrosion test and have an average silicon content of 0.41% as compared to heats which have to be re-tested and whose silicon content is not more than 0.29%. The use of titanium increases upon applying on the bath surface a meniscus of easily smelting fluorite slag prior to adding ferrotitanium. The accumulation of titanium nitrides and titanium oxides in the ingot top can be reduced by increas-

Card 1/3

At the Chelyabinskiy...

pig iron does not impair the quality of the steel. However, no saving can be realised, owing to the higher price of liquid pig iron as compared to that of scrap. 4) Tests were carried out to reduce the riser part of 500-kg ingots (with 5.7-% conicity to one side, an H/D ratio of 3.7 and an ingot-body volume of 57.85 cm) of ЭИ435 (EI435), Х15Н60 (Kh15N60), Х20Н80 (Kh20N80), Х13Ю4 (Kh13Yu4), Р18 (R18), Р9 (R9), 3Х2В8 (3Kh2V8), 1Х18Н9Т (1Kh18N9T) steel grades. With a (liquid) riser volume of 17.4% and a dozzle with a 355-mm opening no shrinkage cavities were observed in the 54 ingot bodies tested. 5) The technology of smelting 20Х15Н3МА (20Kh15N3MA) [ДИ-1 (DI-1)] steel grade in small electric furnaces was established. The steel contained (in %): 0.15 - 0.21 C, ≤ 0.60 Mn, ≤ 0.60 Si, ≤ 0.030 S, ≤ 0.035 P, 14.5 - 16.5 Cr, 2.5 - 3.0 Ni, 0.30 - 0.50 Mo, ≤ 0.40 W. The amount of non-metallic inclusions and rejects during production and utilization can be reduced considerably if the charge contains 5 - 9% chromium and if the metal temperature at the beginning of refining is 1,590 - 1,620°C, before tapping: 1,580 - 1,610°C and in the ladle: 1,570 - 1,590°C. Refining under white slag should take 1 - 1 1/2 hours.

Card 3/3

S/133/62/000/006/015/015
A054/A127

AUTHORS: Keys, N. V., Komissarov, A. I.

TITLE: At the Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Plant)

PERIODICAL: Stal', no. 6, 1962, 572

TEXT: 1) The overall automation of the heating control in open-hearth furnaces has been developed in co-operation with the Chelyabinskiy nauchno-issledovatel'skiy institut metallurgii (Chelyabinsk Scientific Research Institute of Metallurgy). Combustion is controlled by the parameter of excess air in the outlets by means of alpha-indicator type pickups. The automatic heat control increased the furnace output by 5.2%, mainly by shortening the smelting process, and reduced the fuel consumption by 10.7%. 2) It is necessary to do only one intervening repair in the no. 1 open-hearth workshop, by increasing the volume of the slag chamber, removing slag from it completely after repair, removing slag partly and levelling it out with bulldozers during the furnace run, etc.). 3) The quantities of oxygen required for open-hearth furnaces, depending on the

Card 1/3

At the Chelyabinskiy...

furnace volume and during the various phases of the smelting process have been determined (in m^3/hour):

	Small	Medium	Large
	f u r n a c e		
Charging	700	1,200	1,500
Beginning of heating	700	1,200	1,500
Pouring of pig iron and smelting	1,200	1,800	2,500
Finishing	-	1,000	1,200

The heating conditions of open-hearth furnaces are improved if the oxygen is fed mainly in the lower part of the torch. For this purpose the angle of inclination of oxygen tuyeres should be increased from 8° to 14 - 15°, their height above the caisson bottom should be reduced from 300 to 150 - 180 mm and the intersection angle of the tuyeres increased from 8° to 12°, while their rear part is extended. It is expedient to feed oxygen and air simultaneously. 4) Pericalse-spinel bricks used for lining open-hearth furnace crowns wear by 10 - 18% less than magnesite-chromite bricks, but heat losses with the former type are about 8 - 10% higher. 5) New refractory materials were tested. Dense magnesite bricks in the checkerwork of medium-capacity open-hearth furnaces proved satisfactory for 221

Card 2/3

S/133/62/000/007/004/014
A054/A127

AUTHORS: Keys, N.V.; Komissarov, A.I.

TITLE: At the Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Plant)

PERIODICAL: Stal', no. 7, 1962, 618 - 619

TEXT: 1) In 1961, the standstills during repair of the bottom of large-capacity furnaces were reduced from 4.3 to 2.94% and those of small furnaces from 4.27 to 2.62%, as compared with the preceding year. This was the result of using mainly small-grained magnesite powder and improved methods of lining and slag removal. Tests were carried out with magnesite-chromite concrete for the furnace bottom. This concrete contains 47 - 52% magnesium, instead of 80 - 85% as in the standard material and 80 - 85% of the 2-0 mm fraction. The concrete layer was coated with magnesite powder. The use of concrete cut the time of bottom repairs by 1 - 1 ½ h, reduced standstills to 2.5% and the consumption of magnesite powder by 3 - 3.5 kg/ton steel. 2) In cooperation with the Chelyabinskiy nauchno-issledovatel'skiy institut metallurgii (Chelyabinsk Scientific Re-

Card 1/5

At the Chelyabinskiy metallurgicheskiy ....

search Institute of Metallurgy) tests were carried out to blow oxygen in large-capacity open-hearth furnaces through two tuyeres in the crown, at a rate of 1,200 m^3/h. The head of the tuyeres was kept at a 150 - 300 mm distance from the bath level. Oxygen consumption of the torch decreased to 1,000 - 1,200 m^3/h from 2,500 m^3/h. Feeding oxygen at a rate of 5.8 - 7.4 m^3/ton and an intensity of 1,100 - 1,200 m^3/h reduced the casting time by 45 - 59 min. The specific fuel consumption decreased by 4.7 - 9.2%, the total specific oxygen consumption by 1.2 - 4.5 m^3/ton, the average hourly yield of the furnace increased by 6.2 - 9.0%. The new method does not affect the service life of the furnace. 3) The macrostructure of 1 XHT (1KhNT) steel, from which the steering wheel spokes of cars are made, can be improved by using AMC (AMS) alloy for reduction. The waste decreases by a factor of 3 as compared to the steel reduced by silico-chrome. The metal temperature prior to reduction should be 1,610 - 1,625°C. The pouring rate must ensure lifting of the metal level with uniform skin from 1/3 of the ingot mold height. 4) Pouring rimming steel in 7.3-ton ingots (instead of 5.7 ton) on six-position ingot mold stools through a ladle spout 50 mm in diameter, reduced the casting time by 20 - 30 min. The prescribed pouring rate (220 - 280 mm/min) was not affected. 5) In open-hearth furnaces working by

At the Chelyabinskiy metallurgicheskiy ....

the scrap-ore method, 45 - 70% ore was replaced by an agglomerate with a basicity of 0.75 - 1.14 and containing 48.7 - 58.3% Fe; 20 - 24.6% FeO; 54.3 - 59.0% Fe_2O_3; 0.055 - 0.085% S; 10.7 - 12.0% SiO_2; and 5.6 - 13.8% CaO. Due to its lower oxidizing capacity the consumption of the agglomerate exceeded that of the ore by 12%. During smelting the basicity of the agglomerate increased by 0.1 - 0.3. If all the ore is replaced by agglomerate (of a 0.8 - 1.0 basicity) the amount of limestone should be reduced by 1%. The P and S content of the cast iron remained unchanged, the P- content of the metal decreased during smelting by 0.007 - 0.016%, the smelting time was shortened by 4%. The new method does not affect the metal quality. 6) In the last 3 years the annual production of steel increased by 27.5, 22.4 and 12.8% in large, medium and small furnaces. The smelting time in medium and large furnaces increased due to the high silicon content of the pig iron, the considerable fluctuations in the silicon and sulfur content, the high slag residue. 7) In cooperation with the Chelyabinsk Scientific Research Institute of Metallurgy tests were made to produce semi-killed steel. The chemical capping was carried out by adding 45-% or 75-% ferrosilicon in amounts yielding a 120 - 300 g/ton silicon content in the steel for various intervals after the ingot mold was filled. Head-crop was 4 - 5%. Upon adding

Card 3/5

At the Chelyabinskiy metallurgicheskiy ....

400 g/ton 75-% ferrosilicon, the steel corresponded to ГОСТ 380-60 (GOST 380--60). As,however, cavities were found in the macrostructure, the steel grade cannot replace those coming under GOST 1050-60. Mechanical capping was effected by pouring into bottle-shaped molds. The steel obtained was more homogeneous than rimming steel, only increased sulfur liquation was observed at a level corresponding to 18 - 25% from the top. 8) The effect of ferrous oxides in the slag before reduction on the quality of 12ХН3А (12KhN3A), 12Х2Н4А (12Kh2N4A) and 20Х2Н4А (20Kh2N4A) grades was studied in cooperation with the Chelyabinskiy politekhnicheskiy institut (Chelyabinsk Polytechnic Institute). A ferrous oxide content of 12 - 18% did not affect the mechanical properties of steel, nor the oxygen content in the ladle, proving that oxidation of the metal by the slag during tapping is inconsiderable. An increased ferrous oxide content in the slag prior to reduction had some effect on the burning of silicon, manganese and chrome. To simplify the smelting process of the above-mentioned steels, the iron content in the slag prior to reduction can be increased from 12 to 14%. 9) In the 08КП (08kp) steel grade smelted in large furnaces the S-content increased considerably. To reduce it, the pig iron used should not contain more S than 0.04%; during charging about 10% ferromanganese should be added to promote

Card 4/5

Card 5/5

S/133/62/000/007/010/014
A054/A127

AUTHORS: Keys, N.V.; Komissarov, A.I.

TITLE: At the Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Plant)

PERIODICAL: Stal', no. 7, 1962, 636 - 637

TEXT: 1) ЭИ 437 Б (EI437B) grade steel, (200 mm square section) was tested for its mechanical properties and heat resistance. The specimens used for this purpose were partly drawn and partly upset, but subjected to the same heat treatment. The microstructure of the upset specimens was uniform over the whole section and corresponded to an index of 2 - 3 in accordance with the table issued by the Zavod "Elektrostal'" ("Elektrostal'" Plant). The drawn specimens had a nonuniform macrostructure, with grains varying between indices 0.5 - 6 of the table mentioned. The strength limit, relative elongation and compression values were higher for the upset than for the drawn specimens. 2) Contrary to standard practice, 1-ton round section ingots of 20Х15Н3МА (20Kh15N3MA).[ДИ-1 (DI-1)] grade steel were placed into the pusher-type furnace when hot, next they were cooled and finished on grinding machines without having been tempered beforehand. No cracks were observed on

Card 1/5

Card 2/5

At the Chelyabinskiy....

On the two first stands the vertical diameter of the rolled section showed an increase at its end, while on the 300-2 stand this was the case for both ends. Rejects and second grade output for the three stands amounted to 2.4, 1.9 and 1.3% respectively. 6) 2Х13-4Х13 (2Kh13-4Kh13) 200 - 300 mm blooms were tempered at 700°C instead of being annealed at 800°C. The d_B hardness of the steel was 4.0 - 4.5 mm when applying the new method which eliminated hot cracks. Moreover, the servicing of the heating furnace became easier and the productivity was raised by 1.5%. 7) To increase the capacity of the 800-mm stand, the rolling of ingots weighing 1.4 ton (upper section: 420 x 420 mm, bottom section: 336 x 336 mm, height of the ingot body: 1210 mm, conicity 3.8%, riser volume: 19.5% of the ingot volume) was introduced. The quality of the metals tested was satisfactory with the exception of the ШХ15 (ShKh15) grade. In the 1.4-ton ingots of this grade a higher axial porosity was observed than in the 1.115 ton ingots, therefore the conicity increased to 4.7%. By rolling larger ingots, the productivity was raised by 7%. 8) Tests were carried out to find the causes of coarse-grained structure formation in the 40ХН (40KhN), 40ХНМА (40KhNMA), 20ХН3А (20KhN3A) and 30ХГСА (30KhGSA) steel grades. Cracks due to this structure in hardened specimens of 40KhN and 40KhNMA grades are caused by cooling the blooms in air prior to heat treatment. The notch toughness of transverse specimens decreases by a factor of 2. The cracks

Card 3/5

At the Chelyabinskiy....

in the 20KhN3A grade are caused by overheating the ingots before rolling. This can be rectified by subsequent normalization at 900°C. 9) A study was made of the effect of cerium-modification on macrostructure, microstructure, mechanical properties and ductility at the temperature of hot mechanical treatment, of the 18ХНВА (18KhNVA), 30ХГСА (30KhGSA), 12Х2Н4А (12Kh2N4A), Х17Н2 (Kh17N2) and 1Х18Н12М2Т (1Kh18N12M2T) steel grades. Cerium was added to the various grades in different ways. After cerium modification, the strength limit and elongation values increased for the 18KhNVA grade, whereas its notch toughness was reduced. The strength limit, yield point and notch toughness increased in the 30KhGSA grade and its relative compression decreased; in the 12Kh2N4A and Kh17N2 grades cerium caused a deterioration of the mechanical properties, whereas it ensured a dense macrostructure and good corrosion resistance in the 1Kh18N12M2T grade. 10) To eliminate blister formation in 500-kg ingots (with a 5.7% conicity) of Х15Н60 (Kh15N60) and Х20Н80 (Kh20N80) chrome-nickel steels (sometimes 25% of the ingots proved defective), the oxidized skin must penetrate into the riser, it was found. For this purpose the ingot diameter under the riser was increased from 335 to 355 mm, while its upper opening was reduced from 230 to 190 mm. In 83-mm rods produced by this method, no blisters were found. 11) The causes of low ductility of ЭИ437Б (EI437B) steel shown in transverse cracks at the begin-

Card 4/5

At the Chelyabinskiy.....

S/133/62/000/007/010/014/
A054/A127

ning of forging were studied. As these cracks are absent immediately after casting, they are evidently caused by slow cooling from the forging temperature. The mechanical properties and long-term strength of low-ductility specimens conform to the prescriptions (σ_B = 90.8 ÷ 110.6 kg/mm^2, δ = 14 ÷ 24%, ψ = 16.7 ÷ 27.3%, ak = 3.0 ÷ 6.5 kgm/cm^2, long-term strength 106 - 197 hours).

Card 5/5

KEYS, N.V.; KOMISSAROV, A.I.

Increasing the importance of plant laboratories by the introduction of scientific anc technological innovations. Zav.lab. 28 no.1:117-118 '62. (MIRA 15:2)

1. Nachal'nik TSentral'noy zavodskoy laboratorii Chelyabinskogo metallurgicheskogo zavoda (for Keys). 2. Zamestitel' nachal'nika TSentral'noy zavodskoy laboratorii Chelyabinskogo metallurgicheskogo zavoda (for Komissarov).
(Chelyabinsk--Metallurgical laboratories)

KEYS, N.V.; KOMISSAROV, A.I.

Research by the Chelyabinsk Metallurgical Plant. Stal' 22 no.7:604-605,618-619,636-637,651 Jl '62. (MIRA 15:7)
(Metallurgical research)

KOMISSAROV, A.I., kand.tekhn.nauk, dotsent; SKIBITSKAYA, I.K., studentka

Design of three-dimensional hinged mechanisms according to the position of the links. Nauch.trudy MTILP no.23:164-179 '61. (MIRA 15:9)

1. Kafedra mashin i apparatov legkoy promyshlennosti Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.
(Mechanical movements)

KOMISSAROV, A.I., kand.tekhn.nauk, dotsent; ZAK, I.S., aspirant

Plotting of diagrams of the thread feed of sewing machines with a double-thread chain stitch. Nauch.trudy MTILP no.23:171-179 '61. (MIRA 15:9)

1. Kafedra mashin i apparatov legkoy promyshlennosti Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.
(Sewing machines)

KOMISSAROV, A.I., kand.tekhn.nauk, dotsent; FEDOROV, V.I., assistent

Plotting of diagrams of the thread feed of sewing machines with rotating loopers. Nauch.trudy MTILP no.23:180-189 '61. (MIRA 15:9)

1. Kafedra mashin i apparatov legkoy promyshlennosti Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.
(Sewing machines)

KEYS, N.V.; KOMISSAROV, A.I.

At the Chelyabinsk Metallurgical Plant. Stal' 22 no.10:916 O'62
(MIRA 15:10)

(Ingot molds)

S/133/63/000/004/004/011
A054/A126

AUTHORS: Keys, N. V., Komissarov, A. I.

TITLE: At the Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Plant)

PERIODICAL: Stal', no. 4, 1963, 336 - 337

TEXT: 1. To improve ductility and corrosion resistance of the X18H10T (Kh18N10T) stainless steel, the metal temperature prior to blowing oxygen was raised to 1,600 - 1,620°C, titanium was added after feeding lime-containing slag. This made it possible to reduce the cindering of nickel after O_2-blowing and stabilize the degree of titanium adsorption. Still better results were expected of the use of a slag with a higher lime content. The first slag was tapped after the first reduction with silicon and coke (2 kg/ton), next fresh slag, containing 1% lime and 0.25% fluor (of the charge weight) was added. Reduction after O_2-blowing was carried out with a smaller amount of silicon and lumps of ferrosilicon and ferrochrome, calculating a 13 - 14% Cr content in the melt. The waste due to corrosion in the test heats was 8.5 and 3.6% (as against 13% in the

Card 1/ 7

At the Chelyabinskiy metallurgicheskiy zavod...

conventional ones), on account of a more thorough reduction of the metal prior to adding ferrotitanium. At a 0.1% C content the optimum amount of titanium should be 0.5 - 0.6%. The corrosion resistance of the X18H9T (Kh18N9T) and X17H13M2T (Kh17N13M2T) grades was improved by the addition of rare earth elements (0.05 - 0.12%), and the ductility of the metal, its casting properties and surface became also better. 2. Tests were carried out in co-operation with the Chelyabinskiy nauchno-issledovatel'skiy institute metallurgii (Chelyabinsk Scientific Research Institute of Metallurgy) to improve the ЭИ-АМ10А (EI-AM10A) grade. The steel was melted in large electric furnaces either with a fresh charge or with the oxygen-remelting of alloy scrap. Prior to tapping the oxidizing slag, the bath was reduced by 5 kg/ton cast iron, and after deslagging by calcium silicate, ferrosilicon and aluminum (4,1 and 0.3 kg/ton respectively). The 2.65 ton ingots were cast with carbon tetrachloride. 2 - 3% lime in the charge reduced the sulphur content of the metal by 0.001% and the phosphor content by 0.003%. The pouring of the metal was prolonged to 140 - 170 sec at a metal temperature in the ladle of 1,575 - 1,580°C and to 160 - 190 sec at 1,585 - 1,590°C. As compared to 1961, the waste was reduced from 13.9 to 3.8% in the metallurgical plant and at the user's plant from 5,8 to 2.9%. 3. In co-opera-

At the Chelyabinskiy metallurgicheskiy zavod...

tion with the Chelyabinsk Scientific Research Institute of Metallurgy, tests were made to reduce the non-metallic inclusions in the 30 ХГСА (30KhGSA) grade. The best results were obtained with a rapid and intense oxidation at 1,620 - 1,640°C, with preliminary reduction by cast iron, manganese silicate, aluminum, coke (1 - 1.5 kg/ton during 15 minutes) and ferrosilicon powder (5 kg/ton) in three batches, mixing 1 kg/ton aluminum in the 2nd and 3rd batch. The test metal contained hardly any globules; the amount and the size of oxide inclusions was somewhat higher than usual, but still below the standard limit. 4. 2.65-ton ingots of the ШХ 15 (ShKh15), 38КhMYuA, 30KhGSA, 18 ХНВА (18KhNVA), etc. grades were cast in uniformly walled molds. Their durability decreased from 26 to 21 castings without, however, increasing the cast iron consumption (60 kg/ton). The macrostructure of the test steels was about the same as when using conventional molds, only the axial porosity was found to have slightly increased. 5. In co-operation with the Chelyabinsk Scientific Research Institute of Metallurgy, tests were made to melt electrosteel with cast iron previously refined in a converter. For this purpose a discarded 200-ton ladle was used, over which a smoke canopy was mounted. A water-cooling tuyere with a 45-mm outlet was set in the opening of the canopy. Oxygen consumption was 15 - 30 m^3/min., steam con-

Card 3/7

At the Chelyabinskiy metallurgicheskiy zavod...

sumption 30 - 50 m^3/hour; blowing took 50 - 70 minutes. To protect the lining and to dilute slag, maximum amounts of 2.5% lime and 1% iron ore were added during melting. The content of various additives before (numerator) and after (denominator) oxygen blowing was:

C	Si	Mn	S	P
4.18 / 3.42	0.99 / 0.30	1.19 / 0.45	0.054 / 0.045	0.162 / 0.127

Previously refined cast iron amounting to 50% of the metal-charge weight was used for U7A - U12A (U7A-U12A) and ShKh15 grades. The smelting time was shortened by 39 minutes or 10%; electric power consumption decreased by 20%.

6. A technology was established for melting stainless steel in large-capacity arc furnaces. After several failures the cooling of the bath (by adding ferrochrome), the addition of alloying elements, the recution of the slag were under control. The operating period at increased power was shortened. After blowing, silicomanganese was added to the slag. Metal cinder amounted to an average of 8.5% of the charge weight; the adsorption of chrome attained 82%. In dependence of the C-content and O_2-pressure, blowing lasted 50 - 80 minutes. The macro-

At the Chelyabinskiy metallurgicheskiy zavod...

structure of steel was satisfactory. The heats with a higher index for the alpha-phase had a chrome-nickel ratio between 1.78 and 1.95. 7. The technology for C6 08X 20H 10 Γ6 (Sb08Kh20N10G6) grade (with an increased ductility) has been established. The steel was melted in small arc furnaces with the remelting of stainless steel scrap, oxygen blowing in the bath and refining under white slag. The welding rods made from the steel at the Beloretskiy metallurgicheskiy komoinat (Beloretsk Metallurgical Plant) displayed low ductility, both during production and in use. Ductility was found to depend on the final metal temperature, the chrome content of the bath during blowing and the content of P, Cr, Ni and C in the steel. In the low-ductility heats the ladle temperature, the P and C content and the amount of the alpha-phase were too high, the Cr:Ni ratio was too low. The highest ductility was obtained when modifying with ferrocerium after the final reduction by aluminum (0.5 kg/ton). 8. The slags obtained in melting highly heat-resistant alloys and master alloys contain very little FeO, Cr_2O_3, SiO_2 reducing oxides and a relatively large amount of calcium oxides and calcium fluorite, therefore they can be used in slag forming prior to the addition of ferrotitanium in melting stainless steels, hereby increasing the titanium adsorption from 44.6 to 50.3%. This kind of slag contains 17 - 20% nickel re-

Card 5/7

At the Chelyabinskiy metallurgicheskiy zavod...

sidue after the melting of nickel alloys and saves nickel (4 kg/t), 18-% ferro-titanium (6.5 kg/t), Xp000 (Khr000) ferrochrome (0.6 kg/t), fluor (1.3 kg/t) and lime (10 kg/t) when used in melting Cr-Ni steels. 9. A new composition was established (in co-operation with the Vostochniyy nauchno-issledovatel'skiy institut ogneuporov/Eastern Scientific Research Institute of Refractory Materials) for induction furnace crucibles, ensuring a longer service life, containing fused magnesite with the following granulometric distribution: 4 - 2 mm: 25%, 2 - 1 mm: 35%, 1 - 0.09 mm: 20%, 0.09 - 0 mm: 20%. Crucibles of this material have a durability of 26 melts and a lower tendency to coking with other materials. The macrostructure of metals melted in such crucibles improved. 10. In co-operation with the Institut elektrosvarki im. Ye. O. Patona (Institute of Electrowelding imeni Ye. O. Paton) the technology for the ДИ-1 (DI-1) (20Х15Н3МА/20Kh15N3MA) grade was established, using electroslag remelting, in a 300-mm diameter crystallizer. For ingots of 600 - 630 kg the АНФ-6 (ANF-6) fluxing agent was used in an amount of 20 - 28 kg/ingot. The ingots had a smooth surface. The silicon content of the steel was reduced by 0.04 - 0.18%, that of sulphur from 8 - 6 to 6 - 4 . 10^{-3}%, the macrostructure of the metal was flawless; the values for strength and ductility were nearly identical in longitudinal and

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At the Chelyabinskiy metallurgicheskiy zavod...

transverse specimens. The index for oxide inclusions decreased from 3 - 5 to 0.5 - 1, that of sulfides from 2.5 - 3.5 to 0.5. 11. Tests were made to study the annealing, decarburization and red-hot stability of the P18 (R18) grade. The test metal was annealed in a compartment furnace by heating to 860°C at a 100°/h rate, with holding for 0.5 h/ton, cooling to 700°C at a 30°/h rate, followed by air cooling. To shorten the time of increased temperatures, when decarburization takes place more intensely, the charge weight was limited to 10 t, but lateron increased to 20 t. The furnace output was raised from 0.48 to 0.65 t/h, the decarburized layer changed only slightly by 0.15 - 0.2 mm. Red-hot stability was tested on 90 - 100 mm diameter forged rods that were heated to 840 - 860°C, oil-hardened at 1,280°C, next annealed three times at 560°C with one-hour holding and then air-cooled. The hardness of the specimens was between 62 and 64 R_C. Subsequently they were again annealed at 620°C with a holding time of 4 h and then air-cooled.

Card 7/7

S/133/63/000/004/006/011
A054/A126

AUTHORS: Keys, N. V., Komissarov, A. I.

TITLE: At the Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Plant)

PERIODICAL: Stal', no. 4, 1963, 353

TEXT: 1. To reduce the surface to be processed by grinding wheels, ingots were given a semi-circular shape and their weight was increased from 1,115 to 1,290 kg. The semi-spherical shape is machine-planed, the flat parts are finished with grinding wheels. The new, heavier ingots increased the productivity by 8.5%, reduced the labor required for surface finishing by a factor of 2 and reduced the number of grinding wheels used to 4,300 per 1,000 ton casting. 2. The ductility of 1Х18Н9Т (1Kh18N9T) grade decreased when the composition was modified by the ГОСТ 5632-61 (GOST 5632-61), reducing the nickel content. To improve this, heats with an α-phase indexed by 2.5 or more were subjected to a stepped heat treatment, lasting 12 hours, during which the ingots were kept for 5 hours at a lower (1,180 - 1,200°C) temperature. The ingots should be heated

Card 1/2

in cell-type soaking pits of a high heat capacity. 4. To reduce the carbide inhomogeneity in 160 - 180 mm X12M (Kh12M) forged pieces, forging is carried out via intermediate strips according to the following pattern: 280 x 220 → 240 x 280 → 240 x 180 → 180 x 180 mm and with homogenization of the slabs. As compared to oval slabs those forged according to the above pattern have a carbide inhomogeneity index reduced by one. Homogenization at 1,180°C for 50 hours with a subsequent surface machining decreased this index for 140 mm circular sections by 2. 5. Chrome-aluminum alloy ingots (X13Yu4/Kh14Yu4, OX23Yu5/OKh23Yu5, OX27Yu5A/OKh27Yu5A) usually finished on lathes and subsequently by pneumatic hammers are successfully surface-treated with grinding wheels. The ingots must be thoroughly heated to 550°C with grinding taking place in the 550 - 230°C range. 6. The X13Yu4 (Kh13Yu4) ingots which were hitherto fed in a pusher type furnace while hot were tested to be cooled in unheated soaking pits to 50°C in 90 hours. After surface finishing they were fed into the furnace with a temperature of 350°C at the rear part and heated for 20 hours, but these ingots displayed inner concentrical cracks during forging. Better results were obtained with ingots that were fed into the furnace at 700°C, held for 10 - 12 hours, after which they were furnace-cooled to 50°C in 48 - 72 hours. The 90-mm and 130 - 160 mm square sections forged from these ingots had a satisfactory ductility and did not crack, hereby increasing the flawless output by 10 - 15%.

Card 2/2

KOMISSAROV, A.I

AID Nr. 978-7 28 May

CHROMIUM-NICKEL STEEL WITH CERIUM (USSR)

Goldshteyn, Ya. Ye., V. I. Zel'dovich, A. I. Komissarov, and Ye. L. Korotkevich. Stal', no. 4, Apr 1963, 354-358.

S/133/63/000/004/007/011

The effects of the addition of ferrocerium containing 94% rare-earth metals on the mechanical properties of 40XH (0.37% C, 1.03% Ni, 0.57% Cr) steel were investigated at the Chelyabinsk Scientific Research Institute of Metallurgy and the Chelyabinsk Metallurgical Plant. The hardenability of steel increased only with the addition of 0.6% Fe-Ce (smaller additions did not affect the hardenability). Fe-Ce has little or no effect on austenite grain size or the rate of grain growth at high temperature. The addition of 0.10 and 0.25% Fe-Ce had a positive effect on notch toughness. With low-temperature tempering a maximum notch toughness of 5 kgm/cm^2 was obtained in

Card 1/2

AID Nr. 978-7 28 May

CHROMIUM-NICKEL STEEL [Cont'd] S/133/63/000/004/007/011

steel with 0.25% Fe-Ce; with high-temperature tempering a maximum of 22 kgm/cm^2 was obtained in steel with 0.1% Fe-Ce. Fe-Ce lowered the susceptibility of 40XH steel to temper brittleness. An addition of 0.25% Fe-Ce reduced the anisotropy of mechanical properties, 0.10% Fe-Ce had no effect, and 0.6% Fe-Ce increased the anisotropy. The addition of 0.6% Fe-Ce lowered the temperature of transition to brittle behavior by 30 to 40°C, which can be attributed to the purifying and refining effect of Fe-Ce. [WW]

Card 2/2

S/133/63/000/004/009/011
A054/A126

AUTHORS: Keys, N. V., Komissarov, A. I.

TITLE: At the Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk Metallurgical Plant)

PERIODICAL: Stal', no. 4, 1963, 364

TEXT: 1) Tests were carried out to shorten the cooling time of X17H2 (Kh17N2) grade ingots. After casting and stripping the ingots were laid out ouside for 1 hour. They were set in the furnace at 50°C for 24 - 72 hours and annealed at 670°C for 48 hours. No cracks were found in the ingots after this treatment. Accelerated cooling was also applied to forgings with double annealing. The first takes place in the soaking pits of the forging workshop, the second in the heat treatment department. To shorten the holding time during annealing for 120 mm square sections, the incubation period of crack formation and the hardness of the metal was studied after 10, 15 and 20 hours holding time at 670°C; in each case the hardness was nearly identical and according to standards. No cracks were observed in 120 mm square and 170 mm circular sections during 45

Card 1/2

At the Chelyabinskiy metallurgicheskiy zavod...

days and 6 months periods. The annealing time of the 120 mm squares in the forging shop was shortened by applying a 12-hour holding time. The new measures reduced the total production cycle by 1 1/2 days and greatly relived the soaking pits that formed the bottle necks in the production process. 2) According to a new technology, the IIIX15 (ShKh15) grade rolled sections are heated at a maximum possible rate to 790°C, held for 1 h/t, cooled at a 20°C/h rate to 680°C, next held for 6 hours, then cooled in 2 hours under the hood and in air. Over-annealing in respect of the pearlite phase could be reduced from 2.15 to 0.48%.

Card 2/2

L 17461-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JG

ACCESSION NR: AP3004783 S/0129/63/000/008/0019/0023

AUTHORS: Keys, N. V.; Komissarov, A. I.

TITLE: Use of cerium for modification of construction and stainless steels and cast iron

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 8, 1963, 19-23

TOPIC TAGS: stainless steel, machinery construction steel, Ce, cerium, cast iron, ferro cerium

ABSTRACT: Authors were part of a group which carried out tests devoted to the employment of cerium as a steel modifier. Purpose of these tests was to reduce the hydrogen content in 40 KhN steel, which is susceptible to flaking, and to remove the bright spots which were encountered in the fractures of OSV axle steel samples. The effect of ferrocerium admixtures upon the properties of construction steels and an increasing the strength of cast iron ingot molds. The tests showed that an admixture of ferrocerium to the 40 KhN and OSV steels brings about a reduction in the sulfur content, lowering of the critical points and increase in strength. Tests on 16KhNBA, 30KhGSA, 12Kh2N4A, Kh17N2 and 1Kh18N12M2T steels corroborated the possibility of using rare earth metals as modifiers for improv-

Card 1/2

L 17461-63

ACCESSION NR: AP3004783

ing the steel's quality. Ferrocerium admixtures lower the steel's susceptibility to flaking. The resistance of ingot molds from cerium cast iron is 1-5 times greater than those from raw cast iron. The amount of complex modifier depends upon the sulfur content. The advantage of the cerium modifier is that it can be introduced into ordinary ladles without the erection of autoclaves and special chambers because a violent reaction of the modifier with the cast iron does not take place. Orig. art. has: 3 figures and 4 tables.

ASSOCIATION: Chelyabinskiy metallurgicheskiy zavod (Chelyabinsk metallurgical works)

SUBMITTED: 00 DATE ACQ: 06Sep63 ENCL: 00

SUB CODE: ML NO REF SOV: 000 OTHER: 000

Card 2/2

KOMISSAROV, A.I., kand. tekhn. nauk, dotsent; STOROZHEV, V.V., assistent; CHERVYAKOV, F.I., aspirant

Effect of the structure of thread interlacing on the quality of the shuttle stitch. Nauch. trudy MTILP no.27:198-204 '63. (MIRA 17:11)

1. Kafedra machin i apparatov Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.

KEYS, N.V., inzh.; KOMISSAROV, A.I., inzh.; MYSINA, G.Ye., inzh.; DONETS, R.N., inzh.

Studying the hardenability of bearing steel produced by the Chelyabinsk Metallurgical Plant. Stal' 23 no.4:360-362 Ap '63. (MIRA 16:4)

1. Chelyabinskiy metallurgicheskiy zavod.
(Bearing metals—Hardening)

KOMISSAROV, A.I., inzh.; KHUDEN'KIKH, A.A.

Annealing of rolled shapes at the Chelyabinsk Metallurgical Plant.
Stal' 23 no.4:362-363 Ap '63. (MIRA 16:4)

1. Chelyabinskiy metallurgicheskiy zavod.
(Chelyabinsk—Rolling mills) (Annealing of metals)

KEYS, N.V.; KOMISSAROV, A.I.

Research at the Chelyabinsk Metallurgical Plant. Stal' 23 no.4:303, 321-322, 330, 336-337, 353, 364, 380, 383 Ap '63. (MIRA 16:4)
(Chelyabinsk--Metallurgical research)

KEYS, N.V.; KOMISSAROV, A.I.

Using cerium for the inoculation of structural and stainless steel and cast iron. Metalloved. i term. obr. met. no.8:19-23 Ag '63. (MIRA 16:10)

1. Chelyabinskiy metallurgicheskiy zavod.

KOMISSAROV, A.I., kand. tekhn. nauk, dotsent

Designing of crank and rocker mechanisms for the thread feeders of sewing machines. Izv. vys. ucheb. zav.; tekh. leg. prom. no.2:168-178 '63. (MIRA 16:10)

1. Moskovskiy tekhnologicheskiy institut legkoy promyshlennosti. Rekomendovana kafedroy mashin i apparatov legkoy promyshlennosti.

KOMISSAROV, A.I., kand. tekhn. nauk, dots.; STOROZHEV, V.V., aspirant

[Shuttle systems and mechanisms of sewing machines; characteristics of design and operation, design and calculations] Chelnochnye ustroistva i mekhanizmy shveinykh mashin; osobennosti konstruktsii i raboty, proektirovanie i raschet. Moskva, Mosk. tekhnologicheskii in-t legkoi promyshl., 1964. 19 p.
(MIRA 18:4)

KEYS, N.V.; KOMISSAROV, A.I.

New developments in research. Stal' 24 no.7:619,623 Jl '64.
(MIRA 18:1)

MOROZOV, A.N.; KEYS, M.V.; KOMISSAROV, A.I.

New developments in research. Stal' 24 no.8:753 Ag '64.
(MIRA 17:9)

KOMISSAROV, A.I., kand. tekhn. nauk, dotsent; STOROZHEV, V.V., aspirant

Design and calculation of shuttle systems and mechanisms for sewing machines. Nauch. trudy MTILP no.29:170-189 '64.
(MIRA 18:4)

1. Kafedra mashin i apparatov Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.

KOMISSAROV, A.I., kand. tekhn. nauk, dotsent; LOPANDIN, I.V., assistant

Tension of the thread in the needle of shuttle sewing machines during the carrying of the thread loop through the fabric. Nauch. trudy MTILP no.29:190-197 '64. (MIRA 18:4)

1. Kafedra mashin i apparatov Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.

STOROZHEV, V.V.; RACHOK, V.V.; KOMISSAROV, A.I.

Wear of rotating shuttles. Shvein.prom. no.5:23-25 S-O '65.
(MIRA 18:10)

KOMISSAROV, A.I., kand. tekhn. nauk, dotsent; LOPUKHINA, I.V., assistent

Characteristics of the movement of the needle thread in high-speed shuttle machines. Nauch. trudy MTILP no.30:214-218 '64.

(MIRA 18:6)

1. Kafedra mashin i apparatov Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.

KRAPIVIN, N.I., starshiy prepodavatel'; KOMISSAROV, A.I., kand. tekhn. nauk, dotsent

Design of the counterweights of the crankgear mechanisms of sewing machine needles. Nauch. trudy MTILP no.30:229-240 '64. (MIRA 18:6)

1. Kafedra mashin i apparatov Moskovskogo tekhnologicheskogo instituta legkoy promyshlennosti.

KEYS, N.V.; KOMISSAROV, A.I.; ISUPOV, V.F., inzh.; FADEYEV, I.G., inzh.; NOSOV, V.A., inzh.

New developments in research. Stal' 25 no.7:614-615 Jl '65. (MIRA 18:7)

KEYS, N.V.; KOMISSAROV, A.I.

New developments in research. Stal' 25 no.7:618 Jl '65.

New developments in research. Ibid.:654-655

New developments in research. Ibid.:660

New developments in research. Ibid.:669

(MIRA 18:7)

L 27426-66 EWT(m)/EWA(d)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6017779 SOURCE CODE: UR/0133/65/000/009/0845/0845

AUTHOR: Keys, N. V.; Komissarov, A. I.

ORG: Chelyabinsk Metallurgical Plant (Chelyabinskiy metallurgicheskiy zavod)

TITLE: Production technology of clad steel 3sp-Kh18N10T

SOURCE: Stal', no. 9, 1965, 845

TOPIC TAGS: steel, sheet metal, weldability, metallurgic furnace/3spKh18N10T steel

ABSTRACT: A rational design of the pack was selected. An unsymmetric four-layer pack with a 1.08:1.10 ratio of the thickness of the upper part to the lower part and strips 35-40 mm wide provided for the preparation of sheets of identical thickness. The finished output depends on the width of the strips. Strips 20-25 mm wide do not guarantee a pack seal. The increase in pack width from 700 to 800 mm reduces the consumption factor from 2.26 to 1.83. The effect of heating conditions on the weldability of layers in sheets was studied. When packs are heated in continuous four-zone furnaces, with bottom preheating, a special heating condition is established in the soaking zones (1300-1320°C, 3 hours). The consumption factor was reduced to 1.9-2.0 at peak operation. This work was done jointly with the Central Scientific Research Institute of Ferrous Metallurgy (TsNIIChM) and the Chelyabinsk Scientific Research Institute of Metallurgy. [JPRS]

SUB CODE: 11, 13 / SUBM DATE: none

Card 1/1

UDC: 621.771.23.001.5

L 09135-67 EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) JD/JG

ACC NR: AP6031841 (A,N) SOURCE CODE: UR/0133/66/000/007/0619/0620

AUTHOR: Keys, N. V.; Komissarov, A. I. 41 27

ORG: None

TITLE: Research at the Chelyabinsk Metallurgical Plant

SOURCE: Stal', no. 7, 1966, 619-620

TOPIC TAGS: titanium steel, slag, alloy steel, metal recrystallization

ABSTRACT: The paper contains the following brief reports. *Improving the Technological Conditions for Production of EI481 Steel:* A maximum increase in permanent strength was achieved by melting with oxygen and alloying the metal with ferrocerium in quantities up to 0.5 kg/t in the furnace before removal and 0.7 kg/t in the ladle. This results in a considerable increase in the ductility at temperatures of 950-1150°C as well as a sharp reduction in oxygen concentration. Use of an 1170 kg ingot increases the usable yield by 3-5%. *Casting Stainless Titanium-Containing Steel Under a Slag of Exothermal Briquets:* The charge for preparing the briquets consists of ground calcium-silicon alloy, manganese ore, fluorite, coarse silicate, sodium nitrate, aluminum powder and fluorite concentrate. Consumption of emery wheels for dressing is reduced to 0.8 kg/t as compared with 3.5 kg/t consumed when casting is done with petrolatum; consumption of metal in emery dust is reduced from 12 to 2.6 kg/t which results in an economy of about 5 rubles per ton of steel. *Improving the Quality of Electric Steel by Using Dried Oxygen:* After starting a silicagel dryer, two forty-ton arc furnaces were supplied with extremely dry oxygen. The moisture content in the oxygen was reduced

Card 1/3

L 09135-67

ACC NR: AP6031841

6

from 0.6-1.1 to 0.02-0.04 g/m^3. This resulted in a reduction in the hydrogen content by 0.43 cm^3 per 100 g of metal in high-carbon steel (ShKh15), 1.02 cm^3 per 100 g in medium-carbon steel (38KhMYuA and others) and 1.69 cm^3 per 100 g in low-carbon steel (18Kh2N4VA). Rejected output for individual grades of steel is reduced by 20-30%. *Electroslag Remelting of Steel in Crystallizers with Square Cross Section:* Square crystallizers with an upper cross section of 300×300 mm and a lower cross section of 350×350 mm may be used in electroslag remelting to produce ingots weighing 1.3 tons which are suitable for rolling on an 800 mill. The crystallizer has a smaller cross section than the circular type which reduces flux consumption by 15 kg/t for a slag bath of the same height. The elongated shape of the ingot means that the quota per ton of steel may be reduced by approximately 2% at the previous cutting height. *Improving the Quality of Kh18N10T Steel Made in Large Electric Furnaces:* Kh18N10T steel was melted in 100 ton electric furnaces with partial titanium alloying during extraction. Half of the required quantity of titanium was introduced in the form of 30% ferrotitanium before extraction of the melt and the rest was added in the form of titanium sponge briquets on the bottom of the ladle. The assimilation of titanium was somewhat reduced (from 47 to 46%) although melts containing less than 0.45% titanium were reduced from 20.4 to 11%. The proportion of melts with a silicon concentration of more than 0.60% was reduced from 19 to 6.5%. No melts contained more than 0.70% silicon. The lower silicon concentration made it possible to increase the consumption of ferrosilicon for deoxidation by 100-200 kg/t which increased chromium reduction from 0.65 to 1.01% while the consumption of ferrochromium was reduced by 4 kg/t of usable metal.

Card 2/3

L 09135-67

ACC NR: AP6031841

There was no change in metal quality. *Teeming Steel from Electric Furnaces Using Exothermal Slag Briquets:* Steel from arc furnaces with a capacity of 40 and 100 tons was teemed with exothermal slag briquets of the following composition with respect to dry mass: 5% aluminum powder, 17% each manganese ore and calcium-silicon alloy, 16% nepheline, 32% fluorite, 7.5% sodium silicate, 25% coarse silicate and 3% graphite. Briquets measuring 420×210×30 mm (8.0-8.5 kg mass) were prepared on water glass (6-7% above 100%). Briquet consumption was 3.0-3.5 kg/t. The surface quality of stainless steel ingots was improved by a factor of 3-4. Labor in dressing was considerably reduced by the absence of "collars" and surface defects. The quality of structural steel was improved: ordinarily the fraction of rolled products in the first and second classes of defectiveness with minimum dressing was about 15%, while the fraction in the experimental melts was 80%. *Improving the Durability of Kh15N60 and Kh20N80 Alloys:* Small ingots (150 and 200 kg) were used for improving the uniformity of distribution of rare earth elements within the metal and increasing its ductility. Ferrocerium was added to the ingot mold in quantities of 0.7-1.5 kg/t. The metal in experimental ingots cast at the Beloretsk Metallurgical Combine showed satisfactory ductility during forging and reduction. Addition of ferrocerium increased the durability of the wire from 62 to 91 hours with a further increase to 97 hours with the use of a more improved process developed at the Chelyabinsk Scientific Research Institute of Metallurgy.
[Translation of first seven reports]

SUB CODE: 11, 13/ SUBM DATE: None

Card 3/3 nst

L 09175-67 EWT(m)/EWP(t)/ETI IJP(c) JD/JW/WB

ACC NR: AP7002779 SOURCE CODE: UR/0133/66/000/007/0625/0625

REVIEWER: Keys, N. V.; Komissarov, A. I.

ORG: Chelyabinsk Metallurgical Combine (Chelyabinskiy metallurgicheskiy kombinat)

TITLE: Replacement of high-alloy Kh12N13 steel with steels having lower nickel content

SOURCE: Stal', no. 7, 1966, 625

TOPIC TAGS: high alloy steel, metal casting / Kh12N13 high alloy steel

ABSTRACT: Steel Kh23N6SL does not differ essentially in its properties from Kh23N13 and it is recommended that it be used for casting of heat-resisting and scale-resisting parts instead of the latter; for castings operating in corrosive media, Kh18N9TL steel should be used. [JPRS: 37,758]

SUB CODE: 11, 12 / SUBM DATE: none

Card 1/1

UDC: 669.15-194.001.5

0925 1659

ACC NR: AP6031842 (A,N) SOURCE CODE: UR/0133/66/000/007/0642/0643

38
32

AUTHOR: Keys, N. V.; Komissarov, A. I.

ORG: None

TITLE: Research at the Chelyabinsk Metallurgical Plant

SOURCE: Stal', no. 7, 1966, 642-643

TOPIC TAGS: metallurgy, bimetal, metal forging

ABSTRACT: The paper contains the following brief reports. *Improving the Quality of EI617 Alloy:* Cracks in a bar 32 mm in diameter made from EI617 alloy are caused by rolling overheated and undercooled metal. This phenomenon is eliminated by reducing the prerolling temperature in the continuous furnace from 1160-1180 to 1140-1150°C. This treatment resulted in a reduction of rejects for cracks and made it possible to reduce the diametric margin for grinding. *Reducing Decarbonization of R18 Steel by Using a Protective Coating:* A freshly prepared protective coating of water glass (65%), fire clay (20%), Carborundum (6%), graphite (6%) and commercial borax (3%) was applied by brush in an even layer up to 1 mm thick on the high speed steel before heating of square bars measuring 160-190, 110 and 85 mm. The specimens were then dried at room temperature for at least ten hours. All types of products made from the coated blanks satisfied the requirements on decarbonizing standards, while 27.3% of the specimens

Card 1/3

forged from uncoated blanks showed a decarbonized layer deeper than the permissible standard. The reduction in waste metal increased the usable yield by 3-4%. *Forging Vacuum-Arc Remelted Ingots of ShKh15 Steel Without Roughing:* It is conventional practice to rough vacuum-arc remelted ingots until all traces of the so-called "corona" are removed. Hard steel ingots, in particular those made from ShKh15, must be slowly cooled and annealed before roughing. In order to reduce the technological cycle, forging of the ingots without roughing was introduced after slow cooling in the pits. The ductility of the unroughed ingots and the surface finish of intermediate blanks 130 mm square were satisfactory. The yield of usable metal was raised by 2-3%. *Effect of Technological Factors on Forging of Specimens for Testing Long-Term Strength and Mechanical Properties:* It was found on the basis of an evaluation of the macrostructure of specimens and tests which were conducted that variations in the temperature to which specimens of EI437BU-VD alloy were heated before upsetting in the 950-1060°C range had no significant effect on macrostructure although an optimum is observed at 1020-1040°C. The fine-grain macrostructure of upset specimens is due to underheating during quenching, and in some individual melts--to high carbon concentration (0.07%). The coarse-grained macrostructure of individual melts is due to low carbon concentration (below 0.04%) in EI437BU-VD alloy and is a consequence of increased sensitivity of low-carbon metal to overheating before quenching and forging. *Development of Technology for Production of Bimetal Sheet:* The breaking point of bimetal sheets of St. 3+1Kh18N10T 8-10 mm thick was 46-57 kg/mm^2 (451-559 MN/m^2); yield point 29-33 kg/mm^2 (284-324 MN/m^2); relative elongation δ_5=30-38%; shearing strength

L 09121-67

ACC NR: AP6031842

18-30 kg/mm^2 (177-294 MN/mm^2). However, about 5% of the sheets 10 mm thick and 3% of the sheets 8 mm thick did not satisfy requirements for strength of adhesion between layers--shearing strength was below 15 kg/mm^2 (147 MN/mm^2). The packets should be rolled with a negative deflection to produce sheets of identical thickness. Nearly all sheets meet the required standards if the thickness ratio of the upper sheet to the lower is kept within 1.09-1.11 with optimum flattening thickness. In order to produce an 8-mm sheet of a given thickness, the length of the stainless plate should be at least 150 mm greater than the width, while the length should be at least 200 mm greater than the width for a 10-mm sheet. [Translation of reports 1, 2, 3, 4 and 7]

SUB CODE: 11/ SUBM DATE: None

Card 3/3 nst

L 10449-67 EWT(m)/EWP(t)/ETI IJP(c) JD/DJ

ACC NR: AP6022510 SOURCE CODE: UR/0133/66/000/004/0359/0360

AUTHORS: Komissarov, A. I. (Engineer); Khorosh, V. A. (Engineer); Khuden'kikh, A. A. (Engineer)

ORG: Chelyabinsk Metallurgic Plant (Chelyabinskiy metallurgicheskiy zavod)

TITLE: Carbide network in ball-bearing steel and methods for its elimination

SOURCE: Stal', no. 4, 1966, 359-360

TOPIC TAGS: alloy steel, metallurgic research, chromium / ShKh15 alloy steel

ABSTRACT: The effect of the carbon and chromium content and the nature of the thermal treatment of ball-bearing steel on the carbide network index of the steel were determined. The investigation supplements earlier experimental results of the present-- authors (A. I. Komissarov and A. A. Khuden'kikh, Stal' 1963, No. 4). The specimens were kept in the furnace at 1220--1230C for 16 hours and were annealed at 790--800C for a period of 1 hour/ton of steel. The experimental results are presented in graphs and tables (see Fig. 1). It was found that the most important factor responsible for carbide formation was the carbon content in the steel. The chromium content was of secondary importance. The most effective method for lowering the carbide content of the steel (along with decreasing the carbon content to below 1%) was found to be an increase in the rate of cooling after rolling at temperatures not lower than 820--850C. Normalization from a temperature of 920--900C followed by annealing at 790C

Card 1/2

UDC: 669.15-194:669.26

L 10449-67

ACC NR:

ACC NR: AP6012948 SOURCE CODE: UR/0133/65/000/007/0618/0618

AUTHOR: Keys, N. V.; Komissarov, A. I.

ORG: none

TITLE: Improvement of the quality of 18Kh2N4VA steel by electroslag and vacuum arc melting

SOURCE: Stal', no. 7, 1965, 618

TOPIC TAGS: vacuum arc, electroslag melting, steel, vacuum melting, carbon monoxide, silicon, sulfur, manganese, nonmetallic inclusion, steel structure, high quality steel/ 18Kh2N4VA steel

ABSTRACT: Electroslag melting of 18Kh2N4VA steel was performed in a 420 mm diameter crystallizer using ANF-6 and AN-291 flux—with vacuum arc melting in a 380 mm diameter crystallizer at a current strength of 6 ka. During electroslag melting, 20-30% of the silicon was contaminated by carbon-monoxide and the sulfur content was reduced to 0.006-0.007%. During vacuum arc melting, 25-35% of the manganese was contaminated. The electroslag and vacuum arc ingots were poured off to a 175-250 mm and 140 mm squares. The macrostructure of the electroslag parts (140-250 mm) was homogeneous with no inconsistencies. There were no large inclusions: there were only individual point inclusions. Thanks to the directed crystallization, dense macrostructure and purity as concerns nonmetallic inclusions, the melted metal was more isotropic than

Card 1/2 UDC: 669.187.26.001.5

L 22507-66

ACC NR: AP6012948

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open-melted metal. These new metallurgical processes will provide high quality steel for large shapes. [JPRS]

SUB CODE: 13, 09 / SUBM DATE: none

Card 2/2 BK